

CLAIMS

I/we claim:

1. A toy building construction set including a plurality of building units, each building unit comprising:

5 an integral panel having opposing outer and inner major sides connected by a first lateral side, an opposing second lateral side, a top, and an opposing bottom, the first lateral side having a first connection structure and the second lateral side having a second connection structure;

10 an elongate column having four elongate sides, one elongate side being open such that the other three elongate sides form a generally U-shaped channel of the column accessible along the one open side, the column channel receiving and being engaged with the second connection structure of the panel, at least one of the other three elongate sides of the elongate column having at least one female connection structure to provide a female connection side to the building unit; and

15 a connection member having a first male side and a second male side, the first male side being engaged with the first connection structure of the panel and at least part of the second male side projecting outwardly from the panel to define at least one male connection structure and provide a male connection side to the building unit, the male connection structure being configured to releasably engage with any one of the female connection structures of the female
20 connection side of a second building unit, thereby allowing interconnection of building units to construct a toy building.

2. The toy building construction set of claim 1 wherein at least a first building unit and a second building unit of the plurality of building units have panels of different widths between the first and second lateral sides.

25 3. The toy building construction set of claim 2 wherein the first building unit panel has a width generally equal to twice the width of a second building unit panel plus a width of one elongate column.

4. The toy building construction set of claim 3 wherein the width of the first building unit is about twenty-one centimeters and the width of the second building unit is about
30 ten centimeters.

5. The toy building construction set of claim 1 wherein the first connection structure is an elongate channel within the first lateral side of the panel running from proximate the top of the panel to proximate the bottom, the panel channel being configured to accept and engage the first male side of the connection member.

5 6. The toy building construction set of claim 5 wherein the first male side of the connection member includes at least a first tab extending outwardly therefrom, the first tab having a first protrusion configured to engage with at least one mating first aperture along one side of the panel channel to lock the connection member within the panel channel.

7. The toy building construction set of claim 6 wherein the first male side of the
10 connection member further includes at least a second tab extending therefrom, the second tab substantially encompassing a width of the panel channel to provide an interference fit whereby the connection member is essentially immobile in the panel.

8. The toy building construction set of claim 7 wherein the first male side includes four of the first tabs and the panel channel includes four of the mating first apertures.

15 9. The toy building construction set of claim 7 wherein the first male side further includes a plurality of second tabs.

10. The toy building construction set of claim 5 wherein the first male side of the connection member includes a plurality of the first tabs spaced apart and extending outwardly, the first tabs each having a first protrusion configured to engage with any of a like plurality of
20 mating first apertures along one side of the panel channel so as to lock the connection member within the panel channel.

11. The toy building construction set of claim 10 wherein the first male side of the connection member further includes a plurality of second tabs extending therefrom, the second tabs substantially encompassing a width of the panel channel to provide an interference fit
25 whereby the connection member is engaged with the panel channel such that the connection member is essentially immobile in the panel.

12. The toy building construction set of claim 11 wherein the first male side includes four first tabs and the panel channel includes four mating first apertures.

13. The toy building construction set of claim 11 wherein the first male side further
30 includes six second tabs.

14. The toy building construction set of claim 1 wherein the second male side of the connection member includes at least one pair of second protrusions extending outwardly from a

length of the connection member, each second protrusion being paired with and spaced from another second protrusion, each second protrusion being generally semicircular when viewed from a distal end, the at least one pair of second protrusions collectively being generally circular when viewed together from the distal end, the at least one pair of second protrusions having a barb on each second protrusion of the pair.

15. The toy building construction set of claim 14 wherein the at least one pair of second protrusions fits within a coinciding second aperture through one of the sides of the elongate column, the barb of the each of the second protrusions extending through the second aperture and engaging an inner side of the elongate column when the second male side of the connection member is in facing engagement with and abuts one of the sides of the elongate column, enabling locking engagement of the at least one pair of second protrusions within the coinciding at least one second aperture and the locking engagement of the connection member with the elongate column.

16. The toy building construction set of claim 15 wherein the second male side of the connection member includes three pairs of second protrusions, adjacent pairs of the three pairs of second protrusions being equally spaced from one another.

17. The toy building construction set of claim 16 wherein the female connection structure of each elongate column includes three equally spaced second apertures along one of the other three elongate sides to enable engagement with the connection member in any of the other three elongate sides of the elongate column.

18. The toy building construction set of claim 17 wherein center-to-center spacing between any adjacent pair of the second apertures is approximately three centimeters.

19. The toy building construction set of claim 17 wherein each second aperture has a diameter of between five and six millimeters.

20. The toy building construction set of claim 1 wherein the second male side of the connection member includes a plurality of second protrusions spaced along a length of the connection member, each of the second protrusions being paired with and spaced from another of the second protrusions, each of the second protrusions being semicircular when viewed from a distal end, each pair of the second protrusions collectively being generally circular when viewed together from the distal end, at least one of the second protrusions of at least one pair having a barb, configured to engage with one of the second apertures.

21. The toy building construction set of claim 20 wherein each pair of the second protrusions fits within a coinciding second aperture through one of the sides of the elongate column, the barb of each of the second protrusions extending through the second aperture and engaging an inner side of the elongate column when the second male side of the connection member is in facing engagement with and abuts one of the sides of the elongate column, thereby enabling locking engagement of the pair of the second protrusions within the pair of coinciding second apertures and the locking engagement of the connection member with the elongate column.

22. The toy building construction set of claim 21 wherein the second male side of the connection member includes three pairs of the second protrusions, adjacent pairs of the three pairs of second protrusions being equally spaced from one another.

23. The toy building construction set of claim 22 wherein the elongate column includes three of the second apertures equally spaced along each of the other three elongate sides to enable engagement with the connection member in any of the other three elongate sides of the elongate column.

24. The toy building construction set of claim 23 wherein center-to-center spacing between any two adjacent second apertures is approximately three centimeters.

25. The toy building construction set of claim 23 wherein each second aperture has a diameter of between five and six millimeters.

26. The toy building construction set of claim 1 wherein the second connection structure of the panel includes at least a third tab extending outwardly therefrom, the third tab having a circular third protrusion positioned to engage with at least a mating third aperture along one side of the column channel, the circular third protrusion being configured to provide a locking engagement of the second connection structure within the column channel.

27. The toy building construction set of claim 26 wherein the second connection structure further includes at least a fourth tab extending therefrom, the fourth tab substantially encompassing a width of the column channel to provide an interference fit when the second connection structure is engaged with the column channel such that the second connection structure is essentially immobile in the elongate column.

28. The toy building construction set of claim 27 wherein the second connection structure of the panel includes four of the third tabs and the column channel includes four of the mating third apertures.

29. The toy building construction set of claim 27 wherein the second connection structure includes six of the fourth tabs.

30. The toy building construction set of claim 1 wherein the second connection structure of the panel includes a plurality of third tabs extending outwardly therefrom, the third
5 tabs each having a circular third protrusion positioned to engage with a mating third aperture along one side of the column channel, the circular third protrusions being configured to provide a locking engagement of the second connection structure within the column channel.

31. The toy building construction set of claim 30 wherein the second connection structure further includes a plurality of fourth tabs extending therefrom, the fourth tabs
10 substantially encompassing a width of the column channel to provide an interference fit when the second connection structure is engaged with the column channel such that the second connection structure is essentially immobile in the elongate column.

32. The toy building construction set of claim 30 wherein the second connection structure of the panel includes four of the third tabs and the column channel includes four of the
15 mating third apertures.

33. The toy building construction set of claim 30 wherein the second connection structure includes six of the fourth tabs.

34. The toy building construction set of claim 2 further comprising at least one horizontal panel removably engageable with at least one of the top and bottom of the panel of at
20 least one of the plurality of building units such that the at least one building unit makes up at least a part of a wall of the toy building and the horizontal panel makes up one of a floor and a ceiling of the toy building.

35. The toy building construction set of claim 34 wherein a top of the at least one building unit has a plurality of fourth protrusions configured to removably engage with at least
25 some of a plurality of first openings in a bottom major side of the horizontal panel when the horizontal panel is used as a ceiling of the toy building.

36. The toy building construction set of claim 35 wherein the plurality of first openings in the bottom of the horizontal panel are arranged so as to engage with the plurality of
30 fourth protrusions of the building unit, the building unit being one of a first and a second lengths between the first and second lateral side walls of each panel, the first length being longer than the second length.

37. The toy building construction set of claim 34 wherein a top major side of the horizontal panel has a plurality of fifth protrusions that removably engage within at least some of a plurality of second openings in a bottom of the at least one building unit when the horizontal panel is used as a floor of the toy building.

5 38. The toy building construction set of claim 37 wherein the plurality of fifth protrusions in the top major side of the horizontal panel are arranged so as to engage within the plurality of second openings of the building unit, the building unit being one of a first and a second lengths between the first and second lateral side walls of each panel, the first length being longer than the second length.

10 39. The toy building construction set of claim 1 wherein, for each building unit, the panel and the elongate column are made of different polymer materials.

 40. The toy building construction set of claim 1 wherein, for each building unit, the panel and the connection member are made of different polymer materials.

 41. The toy building construction set of claim 1 wherein, for each building unit, the
15 elongate column and the connection member are made of different polymer materials.

 42. The toy building construction set of claim 1 wherein, for each building unit, the panel, the elongate column, and the connection member are each made from polymer materials different from one another whereby each building unit is formed from three different polymer materials.

20 43. A toy building construction set including a plurality of building units, each building unit comprising an integral panel having opposing outer and inner major sides connected by a first lateral side, an opposing second lateral side, a top, and an opposing bottom, the first lateral side having a first connection structure, the second lateral side having a second connection structure;

25 wherein the first connection structure includes three pairs of second protrusions generally equally spaced from each other along a length of the first connection structure, each second protrusion being semicircular when viewed from a distal end, each pair of second protrusions collectively being generally circular when viewed together from the distal end, at least one pair of the second protrusions having a barb on each second protrusion of the pair;

30 wherein the second connection structure includes three generally equally spaced second apertures along at least one of three sides of the second connection structure to enable

engagement with the three pairs of second protrusions in the at least one of three sides of the second connection structure; and

wherein each pair of second protrusions of a first building unit fits within the coinciding second aperture of a second building unit through one of the sides of the second connection structure, the barb extending through the corresponding second aperture and engaging an inner side of the second connection structure when the second connection structure is in facing engagement with and abuts one of the sides of the first connection structure, enabling locking engagement of the pair of second protrusions within the coinciding second aperture and the locking engagement of the first building unit with the second building unit.

44. The toy building construction set of claim 43 wherein center-to-center spacing between any two adjacent second apertures is approximately three centimeters.

45. The toy building construction set of claim 43 wherein each second aperture has a diameter between five and six millimeters.

46. A toy building construction set including a plurality of building units, each building unit comprising:

an integral panel having opposing outer and inner major sides connected by a first lateral side, an opposing second lateral side, a top, and an opposing bottom, the first lateral side having a first connection structure, the second lateral side having a second connection structure;

a connection member having a first male side and a second male side, the first male side being engaged with the first connection structure of the panel and at least part of the second male side projecting outwardly from the panel to provide a male connection side to the building unit, the male connection side being configured to releasably engage with a female connection side of another building unit, the male connection side being configured to releasably engage with any of three female connection sides of other building units, thereby allowing the interconnection of the building units, the second male side includes three pairs of second protrusions generally equally spaced from each other along a length of the male connection side, each second protrusion being generally semicircular when viewed from a distal end, each pair of second protrusions collectively being generally circular when viewed together from the distal end, at least one pair of second protrusions having a barb on each second protrusion of the pair; and

the second connection structure having three generally equally spaced second apertures along at least one of three sides of the second connection structure to enable engagement with

the three pairs of second protrusions, each pair of second protrusions of the connection member engaged with a first building unit fits within the coinciding second aperture of a second connection structure of a second building unit through one of the sides of the second connection structure, the barbs of the second protrusion pair extending through the corresponding second aperture and engaging an inner side of the second connection structure when the second connection structure is in facing engagement with and abuts one of the sides of the connection member, enabling locking engagement of the pair of second protrusions within the coinciding second aperture and the locking engagement of the first building unit with the second building unit.

47. The toy building construction set of claim 46 wherein a spacing between any two adjacent second apertures is approximately three centimeters.

48. The toy building construction set of claim 46 wherein the diameter of each second aperture is approximately 5.5 millimeters.

49. A toy building construction set including a plurality of building units, each building unit comprising:

an integral panel having opposing outer and inner major sides connected by a first lateral side, an opposing second lateral side, a top, and an opposing bottom, the first lateral side having a first connection structure, the second lateral side having a second connection structure;

an elongate column having four elongate sides, one elongate side being open such that the other three elongate sides form a generally U-shaped channel of the column accessible along the one open side, the column channel receiving and being engaged with the second connection structure of the panel, the other three elongate sides of the elongate column each having female connection structures to provide a female connection side to the building unit;

wherein the first connection structure includes three pairs of second protrusions generally equally spaced from each other along a length of the first connection structure, each second protrusion being semicircular when viewed from a distal end, each pair of second protrusions collectively being generally circular when viewed together from the distal end, at least one pair of the second protrusions having a barb on each second protrusion of the pair;

wherein the elongate column includes three equally spaced second apertures along each of three sides of the elongate column to enable engagement with the three pairs of second protrusions in any of the three sides of the elongate column; and

wherein each pair of second protrusions of the first connection structure of a first building unit fits within the coinciding second aperture of a second building unit through one of the sides of the elongate column, the barb extending through the corresponding second aperture and engaging an inner side of the elongate column when the first connection structure is in
5 facing engagement with and abuts one of the sides of the elongate column, enabling locking engagement of the pair of second protrusions within the coinciding second aperture and the locking engagement of the first building unit with the second building unit.

50. The toy building construction set of claim 49 wherein center-to-center spacing between any two adjacent second apertures is approximately three centimeters.

10 51. The toy building construction set of claim 49 wherein each second aperture has a diameter between five and seven millimeters.